Listing of the Claims

1. (Original) A method of monitoring a magnetic field drift of a magnetic resonance imaging apparatus, the method comprising the steps of:

- performing a first data acquisition by a first magnetic resonance signal being caused by a first excitation,
- determining a first phase of the first magnetic resonance signal an echo time after the first excitation,
- performing a second data acquisition by a second magnetic resonance signal a time interval after the first data acquisition, the second magnetic resonance signal being caused by a second excitation,
- determining a second phase of the second magnetic resonance signal the echo time after the second excitation,
- determining a shift of a resonance frequency based on a difference of the first and second phases.

2. (Original) The method of claim 1, whereby the first and second data acquisition are performed using a signal shot EPI method.

3. (Original) The method of claim 1, whereby the first and second data acquisitions are performed by means of a gradient echo sequence method.

4. (Original) The method of claim 3, whereby a k-space is scanned and second data acquisitions are performed intermittently to determine second phases in order to continuously monitor the shift of the resonance frequency.

5. (Original) The method of claim 4, whereby the second data acquisitions are performed after fixed time intervals.

6. (Currently Amended) The method of ~~any one of the preceding~~ claims ~~1 to 5~~, further comprising compensating the magnetic field drift by changing the frequency of the excitation in accordance with the shift of the resonance frequency.

7. (Currently Amended) The method of ~~any one of the preceding~~ claims 1 ~~to 6~~, further comprising compensating the magnetic field drift by adjusting the magnetic field.

8. (Currently Amended) The method of ~~any one of the preceding~~ claims 1 ~~to 7~~, further comprising comparing the shift of the resonance frequency to a threshold value and compensating the magnetic field drift if the threshold value is surpassed.

9. (Currently Amended) The method of ~~any one of the preceding~~ claims 1 ~~to 8~~, whereby the first and second phases are determined in the time domain.

10. (Currently Amended) The method of ~~any one of the preceding~~ claims 1 ~~to 8~~, further comprising performing a Fourier transformation of the first and second magnetic resonance signals and determining the first and second phases in the frequency domain.

11. (Original) A computer program product, in particular digital storage medium, for monitoring a magnetic field drift of a magnetic resonance imaging apparatus, the computer program product comprising program means being adapted to perform the steps of:

- determining a first phase of a first magnetic resonance signal, an echo time after a first excitation,
- determining a second phase of a second magnetic resonance signal the echo time after a second excitation, whereby the second magnetic resonance signal is acquired a time interval after the first magnetic resonance signal,
- calculating a shift of a resonance frequency based on a difference of the first and second phases.

12. (Original) The computer program product of claim 11, the program means being adapted to continuously monitor the shift of the resonance frequency.

13. (Currently Amended) The computer program product of claim 11 ~~or 12~~, the program means being adapted to control an excitation synthesiser in accordance with the shift of the resonance frequency.

14. (Currently Amended) The computer program product of claim 11~~, 12 or 13~~, the program means being adapted to control the magnetic field in accordance with the shift of the resonance frequency.

15. (Currently Amended) A magnetic resonance imaging apparatus comprising processing means ~~(12)~~ for determining a first phase of a first magnetic resonance signal an echo time ~~(TE)~~ after a first excitation, for determining a second phase of a second magnetic resonance signal the echo time after a second excitation, the second magnetic resonance signal being acquired a time interval after the first magnetic resonance signal, and for calculating a shift of a resonance frequency based on a difference of the first and second phases and the time interval.

16. (Currently Amended) The magnetic resonance imaging apparatus of claim 15 having display means ~~(13)~~ for displaying of the shift of the resonance frequency.

17. (Currently Amended) The magnetic resonance imaging apparatus of claims 15 ~~or 16~~ further comprising control means ~~(11)~~ for controlling the generation of the excitations in accordance with the shift of the resonance frequency.

18. (Currently Amended) The magnetic resonance imaging apparatus of claims 15~~, 16 or 17~~, further comprising control means for controlling of the magnetic field in accordance with the shift of the resonance frequency.